

APPENDIX 3

SECTION 404(b)(1) EVALUATION

YAZOO BACKWATER AREA REFORMULATION

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INTRODUCTION

1. As required by Section 404(b)(1) of the Clean Water Act, this evaluation assesses the short- and long-term impacts associated with the discharge of dredged and/or fill materials into waters of the United States resulting from this project.

PROJECT DESCRIPTION

LOCATION

2. The Yazoo Backwater Area is located in west-central Mississippi and lies between the left descending bank Mississippi River levee on the west and the Yazoo Basin escarpment on the east. The area which includes portions of Humphreys, Issaquena, Sharkey, Warren, Washington, and Yazoo Counties, Mississippi, and part of Madison Parish, Louisiana, contains approximately 539,000 acres and is subject to headwater flooding from the Yazoo River, Sunflower River, and Steele Bayou, and backwater flooding from the Mississippi River.

GENERAL DESCRIPTION OF RECOMMENDED PLAN

3. A full range of alternative plans that addressed flooding in the Yazoo Backwater area was considered. These included nonstructural measures, structural measures, and combined nonstructural and structural measures.

4. The recommended plan includes both structural and nonstructural measures. This plan consists of a 14,000-cubic-foot-per-second (cfs) pump with a year-round pump elevation of 87 feet, National Geodetic Vertical Datum (NGVD), at Steele Bayou. Additionally, the plan includes voluntary conservation easements and reestablishment of forest on 62,500 acres of open land below the pump elevation.

5. Typical drawings of proposed project features are displayed on plates contained in Appendix 4. Features of the recommended plan subject to Section 404 of the Clean Water Act and addressed in this evaluation are construction activities involving the discharge of dredged or fill materials into waters of the United States including forested wetlands, open land, and water.

PURPOSE AND AUTHORITY

6. The purpose of the proposed project is to reduce flooding in the Yazoo Backwater Area. Project authority is the Flood Control Act of 18 August 1941.

GENERAL DESCRIPTION OF DREDGED OR FILL MATERIAL

General Characteristics of Material

7. Fill material used in Yazoo Backwater project construction would predominantly consist of clay with some silt to be deposited in disposal areas, and sand, gravel, cement, and riprap for other project features.

Quantity of Material

8. The total estimated quantity of fill material that would be deposited into waters (includes wetlands) of the United States regulated by Section 404 guidelines is approximately

1,000,000 cubic yards. The material will be deposited by dragline and truck. In addition to being deposited in three designated disposal areas, some fill material will be utilized for relocation of a roadway and backfill in the pump area. Anticipated project maintenance requirements over the 50-year project life will entail the periodic removal and deposition of an estimated 160,000 cubic yards of material from the inlet and outlet channels.

Source of Material

9. With exception of gravel, riprap, and concrete, fill materials would be generated onsite from construction associated with the pump site, inlet and outlet channels, and roadway relocation.

DESCRIPTION OF THE PROPOSED DISCHARGE SITES

Location

10. The discharge would be at the pump site, disposal areas, inlet and outlet channels, and portions of a relocated roadway (see Plate 4-46).

Size

11. Wetland acreages impacted by proposed project construction would total approximately 153.7 acres (38 forested, 5.2 water, and 110.5 open land).

Types of Sites

12. There are three confined sites associated with the pump and its appurtenances, along with an unconfined site for roadway relocation.

Types of Habitat

13. Habitat types include forested wetlands, open water, and wetland pasture. The forested wetland habitat is dominated by sugarberry, boxelder, bitter pecan, buttonbush, with rattan vine and muscadine as common vines. Other less common species include Nuttall oak, bald cypress, and black willow.

Timing and Duration of Discharge

14. Discharge timing would depend on preconstruction planning and construction activities. Presently, construction planning is scheduled for initiation in 2001. Construction would begin in 2004 and be completed in 2008.

DESCRIPTION OF DISPOSAL METHOD

15. Fill material for disposal, realignment of levee, backfill around pump, and relocation of a section of roadway would be transported and deposited by truck, bulldozer, and/or dragline. With the exception of gravel, riprap, and concrete, all fill material would be generated onsite.

FACTUAL DETERMINATIONS

PHYSICAL SUBSTRATE DETERMINATIONS

Substrate, Elevation, and Slope

16. The project is located in the Yazoo Basin, a physiographic subprovince of the Mississippi Alluvial Valley, which is a province of the Central Gulf Coastal Plain. Alluvial sediments in the Mississippi River Valley can be subdivided into two units: a fine-grained topstratum that is

further identified by an environment of deposition, and substratum composed of fine sands that grade downward into coarser sands and gravel. The substratum is generally underlain by Tertiary clays or sands. Natural ground elevations range from 100 feet, NGVD, to 70 feet, NGVD, with a relief of greater than 10 feet being rare.

Sediment Type

17. Sediments will consist predominantly of clays and silts.

Dredged/Fill Material Movement

18. Any movement of dredged or fill material after placement would be insignificant.

Physical Effects on Benthos

19. Deposition of fill material would impact benthos organisms. However, this unavoidable impact would be minor because of the relatively small area of water involved (5.2 acres).

Actions Taken to Minimize Impacts

20. The impacts associated with construction of the pump in the lower end of the drainage basin and the deposition of dredged or fill material in wetlands are unavoidable. The construction of inlet and outlet channels will result in unavoidable temporary adverse impacts to water quality. However, the major portion of lands impacted by construction and deposition of fill material will be isolated from neighboring water bodies by dikes and the backwater levee. Unavoidable impacts will be further minimized by the application of best management practices for nonpoint source pollution at the construction site. These nonpoint source control measures will include silt screens, buffer zones, and containment dikes. A Stormwater Prevention Plan that outlines the specific steps that will be utilized to minimize nonpoint source runoff will be filed with the Mississippi Department of Environmental Quality.

WATER CIRCULATION, FLUCTUATIONS, CHEMICAL, AND PHYSICAL DETERMINATIONS

Water

21. Impacts to water quality resulting from project construction activities include short-term localized increases in turbidity and suspended solids due to rainfall runoff at the construction site.

- a. Salinity. No impacts to existing salinity conditions are anticipated.
- b. Water chemistry. As reported in the Water Quality Analysis (Appendix 16), most of the streams and lakes within the project area have been reported by the State of Mississippi as partially supportive for propagation of wildlife, fish, and other aquatic life. The reason cited for partial support is nontoxic, nonpoint source pollution containing high loads of suspended solids and nutrients.
- c. Clarity. The localized increases in turbidity caused by construction would have an effect on clarity. The preexisting condition for clarity should return shortly after the proposed construction.
- d. Color. Any changes in water color would be temporary and minor.
- e. Odor. Construction operations would result in the release of odors otherwise contained. However, this condition is not expected to be hazardous and would be localized and short-lived.
- f. Taste. There are no potable water intakes in the immediate vicinity of the proposed discharge sites.

g. Dissolved gas levels. Increased organic loadings due to construction activities would increase biological and chemical oxygen demand and reduce dissolved oxygen levels. However, dissolved oxygen levels would return to preconstruction levels following completion of construction activities.

h. Nutrients. Sediment disturbance during construction would cause temporary increases in nutrient levels. Such increases would be of short duration and nutrient levels would return to preconstruction levels following completion of construction.

i. Eutrophication. Eutrophication is not expected to result from the temporary and minor increase in nutrients that may reach area surface waters during construction.

j. Current patterns and circulation. Construction of inlet and outlet channels will connect the pumping plant to Steele Bayou and the Yazoo River, respectively. This will allow for high flows to bypass Steele Bayou and be pumped across the Yazoo Backwater Levee when Steele Bayou gates are closed. While this would result in a slight change in current pattern, impacts will not be significant.

k. Velocity. No change in velocity within the Mississippi River, Yazoo River, Steele Bayou, and Big Sunflower River is expected. Neither the pumping plant nor disposal area will impact stream velocities. Velocities of flow in the pump inlet and outlet channels at full capacity will be less than 2 feet per second.

l. Stratification. Water temperatures in the immediate construction area may be affected due to short-term increases in turbidity during construction. Any impact resulting in a change in stratification processes would be minor and temporary.

m. Hydrologic regime. The Yazoo Backwater project pumps would provide for the reduction in interior flooding during those times in which gravity outflow through the existing Steele Bayou structure is not possible. The maximum seasonal effect of the pumps discharging interior floodwaters would be the loss of flooding on 2,915 forested and 1,277 farmed wetland acres. The loss in functional capacity units (FCU's) which reflects both the quality and quantity of a wetland function would total 15,564 FCU's for the forested acreage and 3,011 FCU's for the farmed acreage.

n. Normal water level fluctuations. The Steele Bayou structure is presently operated to control minimum water levels in Steele Bayou from elevation 68.5 feet, NGVD, to elevation 70.0 feet, NGVD. After the project is implemented, the structure would be operated so as to maintain a minimum water level between 70 and 73 feet, NGVD. The increase in minimum water levels will benefit the aquatic ecosystem and associated organisms. Otherwise, water levels would not be impacted.

o. Salinity gradients. Not applicable.

Actions That will be Taken to Minimize Impacts

22. The adverse impacts to water quality associated with removal of vegetation would be minimized by seeding disturbed areas after construction. The Corps will implement stormwater runoff measures in accordance with State of Mississippi laws and regulations. Additionally, the reforestation of 62,500 acres (from voluntary landowners) within the project area will provide significant long-term benefits to water quality. The reforestation would represent 70,526 FCU's. To the extent practicable, disposal areas are sited on open land.

SUSPENDED PARTICULATE/ TURBIDITY DETERMINATIONS

23. The temporary effects of clearing, filling, and/or dredging associated with the proposed project construction would be increases in soil erosion and/or turbidity. Eroded material from the construction site may be transported into nearby drainage ways. This would result in short-term and localized increases in suspended particulates and turbidity levels.

a. Light penetration. Short-term reductions in light penetration are likely to occur during construction activities. These reductions in light penetration are anticipated to be short term and localized to the area adjacent to construction operations. Light penetration levels should return to preconstruction levels soon after construction is completed.

b. Dissolved oxygen (DO). Increases in suspended solids may result in decreases in DO. Also, temporary reductions in photosynthesis due to higher localized turbidity may induce an additional minor reduction of DO.

Toxic Metals and Organisms

24. As reported in the Water Quality Analysis (Appendix 16), trace metals were evaluated within the project area. Thirty-seven surface sediment samples were collected. For most of the metals analyzed, concentrations were within the ranges that occur naturally. However, some samples contained arsenic, cadmium, and mercury in concentrations that exceeded the maximum concentrations occurring naturally in the earth's crust, as reported by Bowen and the U.S. Geological Survey. These sample sites were outside of the construction site, which is the area of direct impact. The project would not exacerbate this existing condition.

Pathogens

25. While coliform and enterococci bacteria may be present in project waters, project construction would not affect this condition.

Esthetics

26. Turbidity plumes will be created as a direct response to construction activities in and adjacent to area surface waters. Since the existing turbidity levels of basin streams are relatively high, it is unlikely that these plumes would result in significant impacts. The loss of 38 acres of forested wetlands would adversely impact esthetics, until vegetation is reestablished. The green space resulting from reestablishment of forest via conservation easements will improve esthetics significantly.

Pesticides

27. The primary source of pesticides is from nonpoint sources of runoff from agricultural practices in the basin. The proposed construction activities would not increase the levels of pesticides. Refer to Appendix 16, Water Quality, for additional information.

Effects on Biota

28. The temporary reduction in light transmissions as a result of erosion associated with construction may temporarily reduce photosynthesis and primary production to a minor degree in aquatic areas adjacent to the construction site.

Suspension/Filter Feeders

29. No significant effects.

Sight Feeders

30. No significant effects. These organisms are generally highly mobile and would avoid or escape any areas of high turbidity.

Actions Taken to Minimize Impacts

31. Disturbed areas would be revegetated as soon as possible following construction.

CONTAMINATION DETERMINATIONS

32. An onsite hazardous, toxic, and radioactive waste (HTRW) assessment of the proposed construction areas was conducted by Corps personnel on 31 July 1998. No indications of hazardous wastes were observed. In addition, a search of the Mississippi Office of Pollution Control's records for known hazardous or potentially hazardous waste sites, landfills, leaking underground storage tanks, and national priorities list sites was conducted. No known or potential sites were identified within a 1-mile radius of the proposed construction area. An HTRW assessment on proposed easement properties will be conducted after they have been identified and prior to any real estate transaction.

AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

Effects on Plankton

33. Any existing plankton in the immediate area of fill material deposition would be adversely impacted due to elevated turbidity levels. However, these impacts would be localized and short-term. Waters (5.2 acres) to be filled would, unavoidably, no longer be available for use by plankton. This unavoidable adverse impact would be offset by 22 acres of water that would be gained by construction of inlet and outlet channels.

Effects on Benthos

34. Some benthic organisms would be adversely impacted by deposition of fill material. The 5.2 acres of water to be filled would, unavoidably, no longer be available for use by benthic organisms. The construction of inlet and outlet channels would create 22 acres of water which would be available for use by benthic organisms.

Effects on Nekton

35. Those waters (5.2 acres) to be filled would, unavoidably, no longer be available for use by nekton. However, 22 acres of water would be created by construction of the inlet and outlet channels.

Effects on Aquatic Food Web

36. The aquatic food web would, unavoidably, be adversely impacted due to the loss of 38 acres of forested wetlands, 110.5 acres of open land wetlands, and 5.2 acres of open water. The aquatic food web would be beneficially impacted by the proposed project design feature of reforestation of 62,500 acres via conservation easements.

Effects on Special Aquatic Sites

37. Aquatic sites within the Delta National Forest as well as a number of other aquatic areas in the basin would experience a long-term improvement in water quality, as a result of reforestation of 62,500 acres. Any direct impacts; e.g., increased erosion during and at the construction site, would be minor and temporary.

- a. Wetlands. Approximately 38 acres of forested wetlands, 110.5 acres of open land, and 5.2 acres of open water would be unavoidably impacted by the project.
- b. Mudflats. Not applicable.
- c. Vegetated shallows. Not applicable.
- d. Coral reefs. Not applicable.
- e. Riffle and pool complexes. Not applicable.
- f. Threatened and endangered species. The U.S. Fish and Wildlife Service advised by letter, 10 August 1994, that their records indicate that the threatened Louisiana black bear (Ursus americanus lutealus) and the endangered pondberry (Lindera melissifolia) occur in the proposed study area. The Corps prepared an Endangered Species Biological Assessment (BA) (Appendix 14), January 2000, that evaluated the potential effects of the proposed project on these species. The BA concluded that the project is not likely to adversely impact the threatened Louisiana black bear or the endangered pondberry.
- g. Other wildlife. Wildlife wetland habitat (38 acres forested and 110.5 acres open land) and associated wildlife would experience unavoidable adverse impacts due to loss of this habitat. Because of the reforestation of 62,500 acres below the pump elevation, unavoidable adverse impacts to wildlife wetland habitat would be offset many times over.
- h. Actions to minimize impacts. Impacts will be minimized by the application of best management practices for nonsource pollution at the construction site. A stormwater prevention plan will be filed with the Mississippi Department of Environmental Quality, outlining the steps that will be used to reduce nonpoint source runoff.

PROPOSED DISPOSAL SITE DETERMINATIONS

Mixing Zone Determinations

38. The mixing zone will be less than 1,000 feet. No water quality criteria should be exceeded by the discharges.

Determinations of Compliance with Applicable Water Quality Standards

39. Changes to water quality conditions as a result of construction or operation of this project are not anticipated to cause long-term changes in the existing water quality within the project area. Only temporary, short-term impacts to water quality are anticipated as a direct result of project construction. These impacts include temporary increases in suspended solids and increases in turbidity levels which would occur only during construction operations.

Potential Effects on Human Use Characteristics

40. Municipal and private water supply. No significant effects.

41. Recreational and commercial fisheries. No significant effects.

42. Water-related recreation. Recreational activities would be temporarily curtailed in the vicinity of the proposed discharge sites during project construction. Temporary increases in turbidity and suspended sediments during construction activities would adversely impact recreational fishing downstream of discharge sites. These impacts would be minor and localized, and occur only during actual construction.

Determination of Cumulative
Effects on the Aquatic Ecosystem

43. The requirement for deposition of fill material during construction would add a relatively minimal amount of pollutants to the proposed project area's aquatic ecosystem. Pollutants would primarily be in the form of temporarily increased sediment loads that would result in minor increases in both suspended solids and turbidity. The proposed construction would impact approximately 5 acres of fishery habitat, and result in the reforestation via conservation easements of 62,500 acres of open land. These reforested lands would provide a higher habitat value for spawning and rearing fishes on the flood plain.

Determination of Secondary
Effects on the Aquatic Ecosystem

44. Secondary impacts on the aquatic ecosystem due to construction would be minimal.

FINDING OF COMPLIANCE FOR FLOOD CONTROL

45. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

46. Deposition of fill material associated with construction requirements for the Yazoo Backwater Reformulation project would adversely impact 38 acres of forested wetlands, 110.5 acres of open land/cleared wetlands, and 5.2 acres of open water. Integral to the project's design is the inclusion of a plan for voluntary conservation easements and reestablishment of forest on 62,500 acres of open land below the pump elevation. This measure would result in significant benefits to fish and wildlife habitat and would offset many times over any project-induced adverse impacts to wetlands.

47. The planned deposition of fill material would not violate any applicable State Water Quality Standards. Further, the planned fill action would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

48. No endangered species or their critical habitat will be adversely impacted by the planned action (refer to section describing Endangered Species Act compliance).

49. The proposed deposition of fill material would not result in unacceptable adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Further, the proposed discharges would not result in unacceptable adverse effects on the life stages of aquatic or semiaquatic organisms, the aquatic ecosystem, diversity, productivity, stability, recreation and esthetic resources, and economic values.

50. Appropriate steps to minimize potential adverse impacts of the fill action on aquatic systems include cessation of fill activities during extreme flood events and avoidance of discharges into open water where possible.

51. On the basis of the Section 404(b)(1) guidelines, the proposed sites for the deposition of dredged and fill material are specified as complying with the requirements of these guidelines.